



## Blood drive short of goal

By Robert Elkin

At a time when increasing demand for blood is outstripping a slowly increasing supply, MIT's contribution to meeting the blood needs of Massachusetts appears to be heading downward.

The 1973 Spring MIT-Red Cross Blood Drive, now in its second and final week, is projected to net less than 1600 pints, the worst showing since 1965, far short of its goal of 2500 pints. After six days, only 1299 pints have been collected.

Last spring, over 2000 pints of blood were collected, and this fall, traditionally a smaller drive, the entire MIT community pitched in to donate 1524 pints.

Currently, all members of the MIT community and their immediate families, including children and grandparents, receive complete blood coverage as a result of the high level of donations in past years. However, if this downward trend continues, as the community increases its usage of blood, MIT could lose this total coverage.

The poor showing, 25% fewer pre-registrants than last spring, comes from almost every segment of the MIT community employees and staff. In past years, students and staff each contributed about half the total number of pints collected. However, figures indicate that the drop is more pronounced in the employee and staff group, though it uses over four-fifths of the total MIT community demand for blood. Only the number of donors from the Draper Laboratories has remained fairly constant.

Michael Kozinetz '75, student chairman of the drive, is at a loss to explain the poor showing. "Our dormitory soliciting started late... it seems as if people, in general, don't know or don't care about the drive. We have tried to make the donation process as convenient and fast as

possible by pre-typing forms. We have even attempted to liven up the Sala with live music."

The Blood Drive will continue in the Student Center Sala de Puerto Rico from 9:45 am to 3:30 pm every day through Friday. It takes only an hour to donate. Appointments can be made by calling x3-7911. Donors can walk in without appointments and are advised that the fastest times center around 10 am and 2 pm.

There are 16,000 potential donors in the MIT community, but only a fraction take the time to give. Anyone between the ages of 18 and 66, weighing at least 110 pounds, and in good health is eligible to donate. Persons 66 and older can also donate if they have specific written permission from their physicians.

MIT contributes almost half the blood collected in Cambridge and over 2% of the statewide total. It currently leads all colleges and universities in Massachusetts in number of pints donated, though Harvard University's rapidly expanding program is threatening to overtake MIT. In past years, the Spring Blood Drive has been the largest peacetime bloodmobile on the East Coast.

The need for blood is especially acute. Over 1000 pints per day are needed in this state, but only two-thirds are covered through volunteer donations to the Red Cross. The rest must be purchased commercially or brought in from other states. The demand is constantly increasing as medical advances require greater blood usage.

The supply of blood from volunteers has increased but not fast enough to meet the increased demand. Supplies tend to be especially short during vacation periods and holidays. At one point last December, there was a total of only 25 pints of blood available in the

## Wellesley rules against opening school to men

By Carey Ramos

Wellesley College has announced a \$70.7 million fund raising campaign for the next decade in order to maintain its status as one of the nation's leading all-women institutions.

Wellesley College President Barbara Newell made the announcement last Thursday, stressing that "co-education has failed on the collegiate level. Women have a conflict of roles in co-educational colleges; they don't speak as much and tend to go into 'women's fields.'" Mrs. Newell stated that the major consideration in the decision to remain an all-women's school had been the interests of Wellesley students. Newell pointed out that Wellesley produces a larger number of economics majors than any other comparably sized school in the US, although economics is generally considered a male field.

Wellesley plans to use two-thirds of the \$70.7 million for academic and student concerns. The remaining third will be used for construction of a new science complex, library additions,

and remodelling of three buildings. *The Tech* asked Newell whether or not the construction of the new science complex would be an incentive for MIT students to take science courses at Wellesley (as opposed to humanities subjects). In response she said, "Yes, I think the proposed developments, particularly in the area of interdisciplinary sciences, might well affect MIT students."

The Wellesley President also

expects an increase in the number of students involved in the

MIT-Wellesley exchange program. "At present we're still trying to solve residential problems. In that regard, I do feel that we will find new areas of joint concern. Currently the two schools are attempting to keep the cross-registration on a one-to-one basis. We hope to increase the number of men coming to Wellesley so that more of our students can go to MIT."

## Tufts, Vlad in UA race; collective is ineligible

By Howard D. Sitzer

The Spring Collective, a group of candidates running for UAP, UAVP, and the Executive Committee on one ticket, was declared ineligible to participate in the Undergraduate Association elections by the Student Committee on Elections.

The Committee on Elections deferred to the Registrar's Office for decisions on the Collective and Curtis Reeves. Reeves, who is not registered as a student this semester, and the Collective were ruled ineligible on the basis that technically the two entities were not "undergraduates."

While Reeves withdrew from the race independently before the weekend, the Collective took a different stance and is protesting the verdict. The principals involved intend to con-

tinue soliciting signatures.

The Committee on Elections told the Collective they would reconsider conditions for eligibility if enough signatures were obtained. At press time, 1,000 signatures had been placed on the Collective's petitions.

In other related events, Linda Tufts '74 and Derek Vlad '74 entered the contest for UAP late in the week. Vlad pointed out that the nominations were a "dynamic process" and quite a few changes were occurring daily in regards to people deciding to run or not to run. Excluding the Spring Collective, five candidates are presently seeking nominations for the ballot on March 21. In addition to Tufts and Vlad, Roland Janbergs '75, Larry Russell '74, and Jerry Wilkens '74 are campaigning for UAP.

greater Boston area.

"We hope that the entire MIT community will continue to respond to this increasing need as they have done in the past," stated Kozinetz. "It is one way that MIT can not only benefit itself, but at the same time help the outside community."

In Course I, "...the opportunities for a strong background and doing research are many." See story on page 2.

## Tech to run course reports

Beginning in today's issue, *The Tech* will present a series of articles describing the nineteen undergraduate departments at MIT. Written by Richard Parker and David Olive, these articles will explain the structure, goals, opportunities, and quality of each department.

The purpose of the series is to acquaint undergraduates with each department so that the selection of a major may be made on a basis other than one subject taken in a specific department.

During the past month the

authors and volunteers have begun to interview heads of departments, faculty members, and students in an attempt to determine what is offered and why.

For the rest of the semester at least one department will be discussed in each issue of *The Tech*. The goal of the series is to include in each article an overview of the department from the eyes of both faculty and students.

A definition of the department both in terms of what it is at MIT and what a graduate of the department will do for the rest of his/her life will be included.

The attempts of the department to include the undergraduate as a full-fledged member of the department will also be discussed. Much of this will be viewed in terms of research opportunities, allocation of faculty time, and frequency of undergraduate seminars and get-togethers.

People who are interested in interviewing people for this series of articles, or anyone who has comments concerning specific departments, courses or teachers should send the relevant information to *The Tech*, Room W20-483.



## NOTES

\* Nominations for the Goodwin Medalist are now being accepted by the Dean of the Graduate School. Submit the names of any candidates to Dean Irwin W. Sizer, Room 3-134, before Monday, April 2, 1973. Nominations may be made by any student or faculty member and submitted through the head of the nominee's department the Undergraduate Association, or the Graduate Student Council. The Goodwin Medal is awarded in recognition of effective teaching by a graduate student who is either a Teaching Assistant or an Instructor. Further information may be obtained by calling x3-4869.

\* ATTENTION UNDERGRADUATES: April 2, 1973 is the deadline date for all Spring UROP requests for wages. No proposals for Spring term wages will be accepted after this date.

\* SUMMER UROP: UROP is offering a summer program this year. Participation will be limited to undergraduates who are continuing ongoing UROP projects. Support for research and personal expenses will be awarded on a matching basis through the usual UROP proposal procedures. Funding decisions will commence April 9 with proposals received on a first come/first serve basis.

\* The Earth and Planetary Sciences department will hold an open house for freshmen. Meet with faculty and present students to learn about careers and programs in this field. Drop in for any part of session — there is no formal lecture. Refreshments served. Tuesday, March 20, 3-5 pm in Room 54-923. For further information contact Prof. R.S. Naylor x3-3398.

\* SUMMER JOBS: Students, both graduate and undergraduate, interested in summer jobs are reminded to review the book of "leads" on display in the Student Financial Aid Office, 5-119.

\* MIT Hillel Society will be sponsoring a Reform Sabbath Service, followed by an Oneg Shabbat of Israeli folk dancing (with instruction) and singing, on Friday evening, March 16 at 8:15 pm in the MIT Chapel. All are welcome.

\* MIT Hillel will sponsor a Purim Service and Megillah Reading on Saturday, March 17 at 8:15 in the Chapel. The service will be followed by a Purim party in Talbot Lounge East Campus.

\* MIT Hillel will present the Fifth Annual Loew Arts Program on Sunday, March 18 at 2 pm in the Little Theatre of Kresge Auditorium. Shulamith is an American-Israeli folk singer. Her program, "Songs of Exile — Songs of Zion" will feature songs in Hebrew, Arabic, Yiddish, and Ladino, and is narrated by Dr. David Neiman of Boston College.

\* Weekend bus tickets to Wellesley College now on sale at the MIT Student Center Coffee House. Schedules available. No more weekend hassling with rides of MBTA!

\* On Wednesday, March 14, 1973 at 7 pm, Drs. Herb Sherman and Barney Reiffen of Lincoln Labs and the Harvard School of Public Health will discuss "Applications of Technology to Paramedical Care" in the Senior Common Room, Leverett House, Harvard University. Interested MIT students are invited to attend.

\* Refreshments! Engineering open house for freshmen women, Thursday, March 15 from 3-5 pm in the Bush Room, 10-105.

\* Association for Women Students meeting today, March 14 from 4-6 pm in Room 3-310. Susan Schur '60, President of AMITA and Janet Markham '74 will answer questions about the AMITA centennial in June. Please come. Refreshments will be served.

\* WISE (Women in Science and Engineering) and the AWS are sponsoring a speech by Paul Rosenkranz of Holy Cross today, March 13, in the Schell Room, E52-461 at 8 pm. The title of the speech is "A Nine-Year Look at Sex Roles" Everyone is invited, refreshments will be served.

# Civil Engineering: students find broad, interdisciplinary curricula

By Richard Parker and David Olive

With the continuing controversy concerning the alleged narrowness of many of MIT's departments, Course I, Civil Engineering, stands as a strong refutation to the charge. According to the MIT General Catalogue, "the undergraduate program of the Department of

courses that comprise the larger course "Civil Engineering."

"Such divisions are necessary," stated Dr. Peter Eagleson, chairman of the Civil Engineering Department, "because the field of civil engineering is such a vast field. Imagine one department concerned with building roads, dams, bridges, and other utilities. Civil Engineering is this

"In a word, Civil Engineering is the field charged with providing society with its constructed facilities."

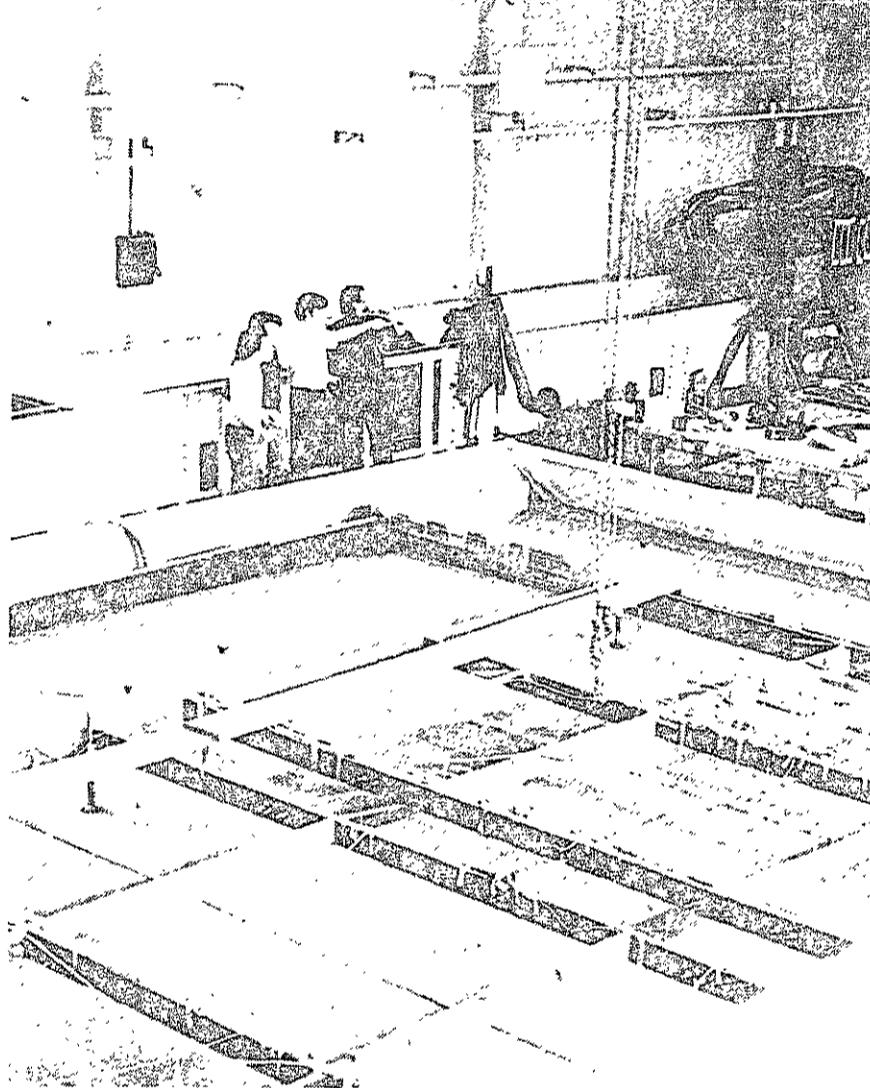
— Dr. Peter Eagleson, Chairman of the department

Civil Engineering is designed to balance the problem-formation and problem-solving needs for a broad range of careers."

Within the department there exist five sub-departments. These divisions: structures, transportation, geotechnics, materials and water resources act cohesively as the mini-

and much more."

The term 'civil engineering' is so encompassing that many students in the department are self-conscious about its ambiguity. As one student in the department stated, "I tell someone I am a civil engineer and I almost feel a need to further explain myself... today, 'civil



Photos by Craig W. Reynolds

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engineering' alone means nothing."

A further demonstration of the breadth of the department is its approach to the activities of civil engineering. Originally, the department centered around the analysis and design phases of an operation. Today, however, it has expanded to include extensive training in planning, construction, and management as well. Stated Eagleson, "Our department must be sensitive and responsive to the public's wishes in serving human needs. Traditionally, the department has been a leader in the field. When a need developed outside the areas of analysis and design, we had to change to meet those needs."

The past ten years has seen a sharp re-directing of priorities within the department. Eagleson

"It is hard to define Civil Engineering in a word since it is two to begin with..."

— William Leimkuhler '73, Student in Course I

explained: "Last year 10% of the GNP was construction, yet only one-tenth of 1% was spent in research and only 1/50 of 1% was spent in basic research. Faced with these figures, the department has learned to work in terms of quality. In the past, students were taught how to build dams and bridges as separate entities, for the human mind only understands things linearly. Now, though, we are beginning to learn how to deal with affected communities as a whole."

The undergraduate department itself is fairly close knit. With 108 students currently majoring in Civil Engineering, there exists a comfortable rela-

tionship between the students and the 43 professors. "Probably the biggest asset of the department," states Robert Collier '74, "is the large degree of contact between professors and students." Although there are many sub-units within the department the students of one field often work and associate with those in other divisions. This inter-action creates a well-unified department. "After all," added Collier, "we are all civil engineers."

There are five basic requirements for every student majoring in Course I. These are required to provide the basic tools necessary to any civil engineer. The introductory course is 1.12, 'Civil Engineering.' The course consists of lectures from the many fields as well as two or three involved case studies. The students in the department who

were surveyed did not recommend the course. Comments ranged from "take after you have already decided to be a civil engineer" to "it is really a series of dull lectures presented in an incoherent manner." 1.13, Behavior of Physical Systems and 1.07, Analysis of Uncertainty, are also required by the major and evoked the opposite reaction from the students. "You won't find anyone who did not like the courses," stated one student.

Also required are 1.11, Engineering Systems Analysis and 1.14, Economics for Engineers. Following the completion of these subjects, a primary and

(Please turn to page 5)

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# Holloman: technological life

By Paul Schindler

(A wide-ranging discussion was recently held by this reporter and Herbert J. Holloman. Excerpts of the transcript are reprinted below. —Editor)

What is your background?

I am presently director of the Center for Policy Alternatives, newly created at MIT, and a visiting professor of Engineering. Prior to this I was an assistant to the President and the Provost, concerned about matters having to do with MIT policy, long term educational policy, and



new areas in which MIT might be interested.

I came to MIT in the fall of 1970; prior to that time, I had been for three years the President of the University of Oklahoma, [and before] that I spent six years as assistant secretary and acting undersecretary of commerce under Presidents Kennedy and Johnson.

Dr. Wiesner was the one who first contacted me with the idea of coming to Washington, in the

early spring of 1962. He introduced me to President Kennedy and Secretary of Commerce Hodges who offered me a job in the sub-cabinet. I had been working with Wiesner previously on a number of things with the President's Science Advisory Committee. I was also in charge of the Central Engineering Laboratory of the General Electric Company, and before that associate director of research.

I think the most important thing is my own sense of changing values of what is important in life, particularly the value of

or the importance of the human animal, you survive, and get enough food and shelter and clothing... Beyond that, the most important things have to do with our relationships with people: Both our relationships to ourselves and our relationship to those we come in contact with. That seems to me to be the most important thing.

Have your jobs interfered with your personal life?

That's a very difficult question. While I was in Washington, my house was filled most of the time with young people. I had two young children living in Washington with me, their friends were there, they were involved in writing legislation, they did projects with me.

At the University of Oklahoma, I had a rule: If the light was on in front of my house, anybody was welcome. It would not be unusual to have 30 or 40 people drop in of an evening. Certainly never less than four or five.

My family and I have a number of common occupations. Two of my sons have worked with me; one of my sons and I just finished a paper together on values having to do with engineering that was published in the *IEEE Spectrum*. He was a political science-philosophy student.

Another son did a study of five US university presidents, of which I was one. Hopefully, someday, we will get it published.

Are close executive families the rule or the exception?

I haven't done any statistical studies. My impression is that many people use work as an escape from themselves. It's a habit; that is work in the sense (Please turn to page 5)

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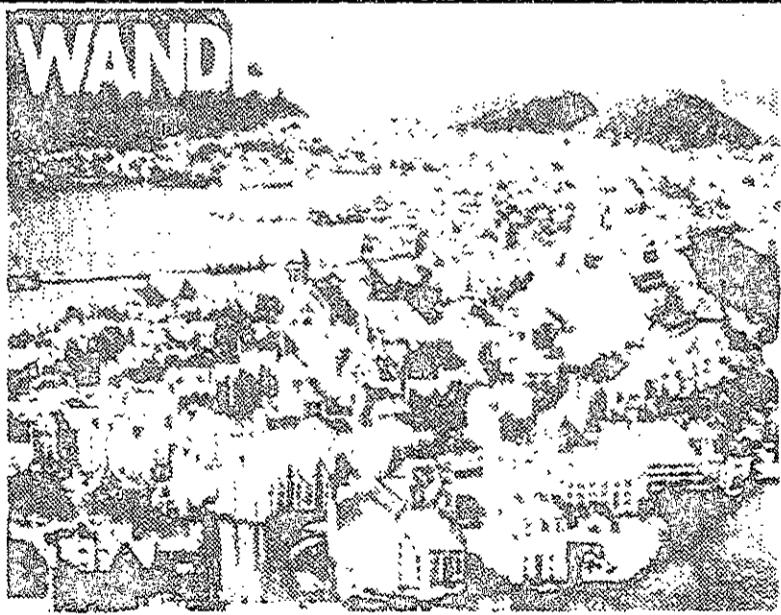


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# Discipline: use the Searle report

By Paul Schindler

Last fall, members of the MIT administration and ROTC occupiers found themselves with one thing in common. They were both quoting the same "Statement of Rights and Responsibilities" to justify their diametrically opposite opinions.

The statement they were quoting has never been adopted as a formal position of the Institute. Rather, it was contained as part of the "Rogers Panel Report" (the "Report of the Panel on the November Events and the MIT Community"). Both groups chose to ignore a later, more complete formulation of rights and responsibilities, contained in the "Searle report" (The "Report of the Working Group on Judicial Process to the Commission on MIT Education").

Their inadvertent non-use is easily understandable; it is clear from the title that this document was part of the work of the Commission on MIT Education, an effort which is probably most notable for the disappearance of all its suggestions (Institute Council, First Division) and the massive indifference which greeted its final report. Yet this more formalized statement of rights and responsibilities (and procedure, and other thoughts on the judicial responsibility) converted the pliant prose of Rogers into something that could not so easily be quoted by two opposing sides.

Before I give an example, let me note that the Searle report is, according to officials, "only one of many" inputs being made to the current CEP study of the judicial process. More succinctly, they have said that their resultant report will most probably not be based on the work of the task force.

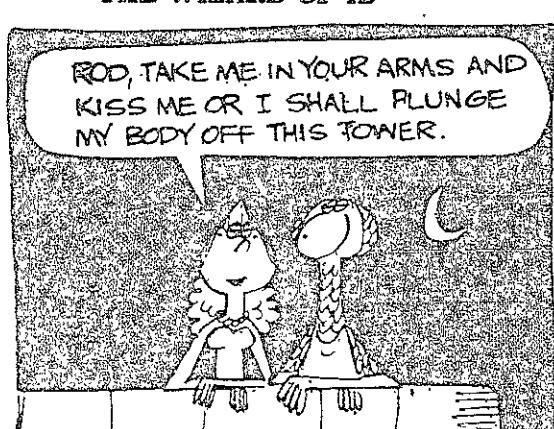
It's too bad. A lot of thought went into the document: if it had been approved by a two-thirds mail vote of both faculty and student body (as suggested) in time for the ROTC hearings, there would have been no questions of ambiguity. Section III B of the Statement of rights and responsibilities: *Each member of the academic community has a responsibility to refrain from actions which deny other members their rights... (Including) forcible or unauthorized occupation of Institute offices or buildings...*

The report carefully defines members of the academic community. It outlines, in what might be termed "broad detail," community rights and responsibilities. And, it sets up a much more rational and equitable process than that which exists now.

Its most important innovation was the inclusion of the administration as part of the judicial process. In the preamble, the document hits the nail on the head: "We have come to believe that the principles of reciprocity and mutual accountability in judicial matters among all students and faculty [including members of the central administration] form the only basis on which a fair judicial system can be built." Effectiveness, the report continues, is dependent on the "respect and trust" of the community as a whole.

This suggestion stands in stark contrast with the current reality of the MIT judicial process. The functioning of the Discipline Committee in political cases has left a bad taste in mouths on all sides. The students resent the actions of the administration and the Dean's office. The administration might well feel it has been double-crossed, as all its careful preparations for punishment were side-tracked. And the faculty is probably split down

THE WIZARD OF ID



The Wizard of Id appears daily and Sunday in The Boston Globe

the middle: some see the defendants as "coddled," others call them "persecuted."

Perhaps all or most of the unpleasantness of last spring might have been avoided with the adoption of another portion of III B: *[members shall refrain from] willful refusal to hear and give response to grievances.* The task force explained in their comments: *The right to petition, by itself, is meaningless unless someone has the responsibility to lis-*

*ten... [this] does not carry with it any obligation to agree with the petition... We recognize the potential for abuse, but feel the language is sufficiently specific and so cast in the negative that it is judicable. Obviously, the burden of proof will lie with the complainant.*

At no time during the charade last fall was any ROTC occupier allowed to publicly accuse the administration of "willful refusal to hear," as effectively (that is, with full legal force) as the administration was able to accuse them of "presence

without right." Until such time as the legal system of MIT allows for such mutuality, it will continue to be viewed as a farce whenever its actions come near that broad province known as "politics."

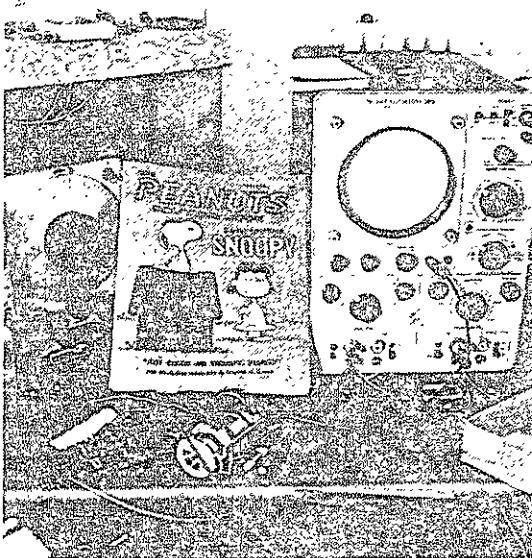
The members of the CEP are rational people. They will, no doubt, do their best to resolve the conflicts inherent in the present system, perhaps clearly defining the total role of the Dean for Student Affairs at the same time. But the Searle report deserves much greater attention than it seems likely it will get.

## Commentary:

### What is ESG?

By Craig Latham, et al

Several years ago, Professor George Valley and a group of MIT faculty members, graduate students, and upperclassmen met to plan the structure for an alternative educational experience at the college level. The plan was implemented at MIT and became known as the Experimental Study Group (ESG). We feel that we've developed and grown to the point where we would like the MIT community to become more aware of who we are and what we do.



We offer freshmen and sophomores the opportunity to choose what and how they want to study without the usual constraints on time, method of study and evaluation, and subject matter. The reason for trying this approach is that we believe individual responsibility in learning is best acquired through taking on such responsibility as early as possible in one's education. In an atmosphere of mutual respect and friendship, freshmen and sophomores, upperclassmen, former students, and staff members are able to recognize their needs and determine the best means of meeting them.

A period of floundering and ennui is a fairly common initial reaction to the freedom offered by ESG. Students are encouraged to consider the nature of their commitment to college, to their friends, and to themselves. The ESG staff and older members work to provide a supportive environment, allowing the disoriented student to deal with the problems he is experiencing.

Freshmen and staff join ESG on a voluntary basis. Prospective ESGers are given as much information as possible about the ESG, and are invited to visit at length. This year about fifty freshmen joined — our largest group ever. Once a freshman decides to join, he or she is asked to choose one of the ESG faculty members as an advisor. The only formal requirement is that the freshman and advisor meet at least every two weeks.

Although essentially a full-time activity for freshmen (and half-time for sophomores), students often take some subjects in the regular curriculum, usually in fields in which the ESG staff does not have expertise (such as foreign languages and computer science). Each freshman usually gets 50 units of free elective credit per term, which is turned into specific credit (e.g. 18.01, 5.41, 21.023) as he or she demonstrates adequate knowledge of an appropriate subject or completes a subject in the regular curriculum. Certification is awarded on an individual basis — each student works out with a staff member a mutually agreeable method of demonstrating competence.

This year a substantial change was made in the operation of ESG. Students have always had a large say in what goes on, but now most of the details of ESG operations have been put in the hands of a student committee. (The ESG as a whole still has final say on major decisions.) So far this arrangement has worked out well. It has taken some time to see exactly what is involved in running ESG, but the committee has proved equal to such tasks as ensuring that the ESG has a good staff for each term, and the writing of an extensive report about the ESG for the CEP.

The day-to-day life of ESG students is in some ways similar to that of students in the regular curriculum. ESGers participate in seminars, talk with staff or other students, or work in the lab for much of the day. However, no student is required



to study any particular subject, or to use any particular method of study. ESGers also use the ESG facilities to eat meals together, to read, and to socialize.

The ESG does not draw sharp lines between academic and non-academic work or between upperclassmen, freshmen, and faculty. Students and staff are on a first name basis. Discussions go from physics to philosophy to literature quite naturally, and anyone with a question can

by Brant Parker and Johnny Hart



almost always get help from another ESGer. Faculty talk with students as peers and even ask students for help. This allows students to see the limits as well as the extent of the faculty's knowledge. It also makes it easy for students to see members of the staff as friends, rather than simply as teachers. Personal problems become a natural subject of discussion in the context of closer staff-student relationships. This communal atmosphere results in what some ESGers regard as a second home at MIT.

Continuous News Service

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# CPA head discusses technological effects

(Continued from page 3)  
 "I've got to get something done," is in some senses a way of avoiding their own emotions and their own relationships with people. I'm not sure about that.

It depends on what you think is up. If you think that advancing in a firm, becoming more productive, becoming wealthier is in fact the most important thing, then you deny some other things. I think the most important things we have are the relationships between people.

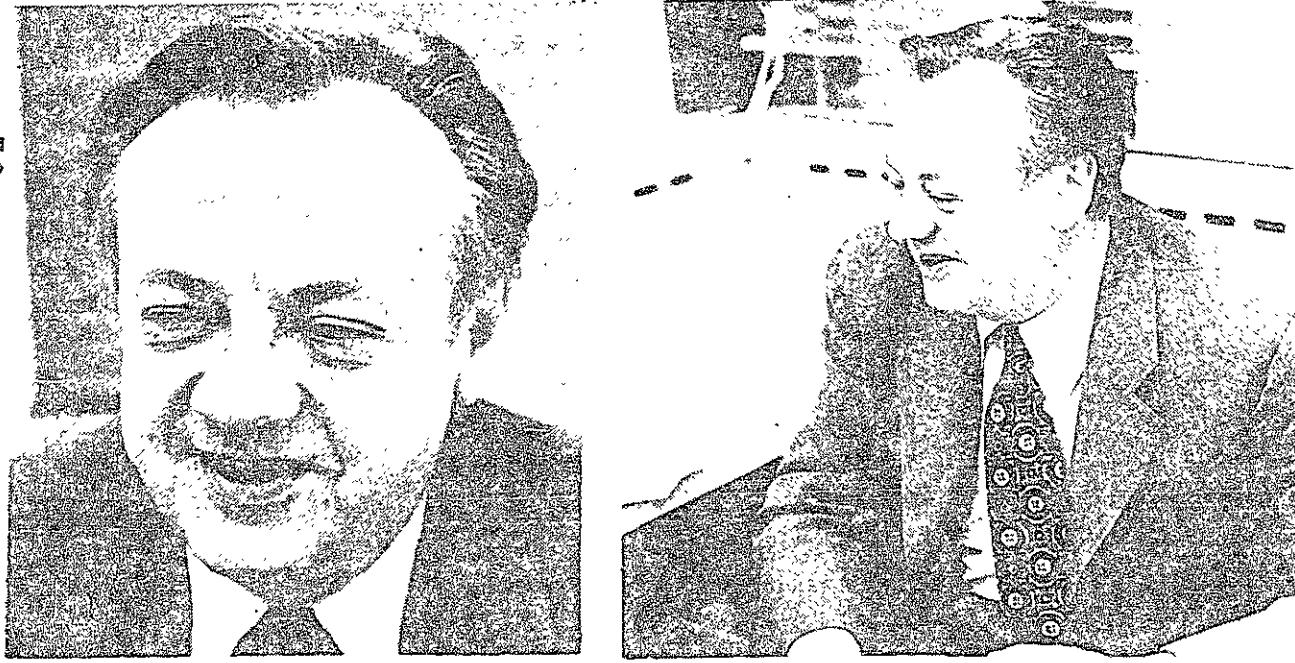
The important point I want to make is that you can use technology for various purposes. You can use it to increase the wealth; you can use it to improve the environment; you can use it to conserve materials or resources. That's the choice society makes. Whatever you do, if you want some change you view as beneficial, the process by which you use technology is crucial to whatever you intend to do. To talk of technology as "demonic" is just nonsensical. It's the purposes to which people put it that make it good or

bad, depending on whose judgement is involved. It is true that technology gives us great power. This power must be used with great deliberation and great restraint.

*Are good executives poor people?*

It depends on the executive. It depends on what he sees as the problem. The central problem of managing enterprise in my view, is how do you effectively make it possible for people to express themselves and work? That's a relationship problem, with them, and with the kind of environment they want, and the kind of aims and desires and values that they have, and within the construct of whatever kind of institution it is that you have the responsibility of managing. In that sense, the problem is deeply a human problem.

If you view management as a collection of analytic tools; organizational structures, decision making theory (which are important), that is a mistaken view of what management is about. Management of an enterprise makes



Photos by Craig W. Keyman

it possible for people to express themselves and to affect the direction in which the institution moves.

Therefore at a university, it involves the students, the faculty, the employees. In a business firm, it means concern about the workers, the professionals, the direction in which the firm is going, and to make an environment which is clearly one which stimulates the person to give something more than just eight hours of crap.

*What modes of expression are*

*available to, say, an assembly line worker?*

Very little. It's clear that in the US, he wants certain things to happen to him. The number of hours a day that he works is relatively small, so he has other opportunities for expressing himself. It is very clear that as the worker is younger and more affluent, he wants to do more than that. It will be in the interest of business firms to provide more possibility of participation of the individual in a creative act, other than simply being a cog in a Charlie Chaplin "City Life."

*What do you think of the Saab system of assembly-lines, where teams create whole cars?*

I don't think we know yet. These experiments are vitally important. There are firms in the US doing similar work. Polaroid is concerned; it is a firm where this kind of participatory, crea-

(Please turn to page 6)

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## Course I: not just building

(Continued from page 2)  
 secondary field of interest should be established. Three subjects are required from the former and two from the latter. During the students' junior and senior years they specialize in one of the five sub-units - this specialization consisting of a combination of study and research.

The students who were interviewed were asked whether or not they thought there were any problems with the civil engineering department. "I think the biggest problem with Course I is its emphasis on the applied. If I had my way there would be more open-endedness to these courses," stated William Leimkuhler '75. "Two examples of this are the courses entitled 'Economics for Engineers' and 'Portland Cement.' Everything in Course I is designed specifically for training as an engineer. I sometimes think I'd like to learn something just for the sake of knowledge instead of always learning how it applies to the civil engineer. But then what I consider to be a weakness of the department may actually be its strength." "Another problem with the department is its lack of coordination with other MIT departments. There seems to be quite a bit of overlapping of material with Aero & Astro, Earth & Planetary, and many other departments. It seems this is unnecessary duplication and

material would be presented much better if there were more cooperation between these departments."

It appears that the Civil Engineering Department is a fine one. In the recent American Council of Education ratings of graduate schools "Our graduate department rated tops in the country," stated Eagleson, "and our undergraduates obtain much of the same training and have access to the same facilities and professors. Most civil engineering departments look to MIT's for leadership. After all, this is where it all began."

Undergraduates who are interested in one of the many

disciplines in Civil Engineering should explore Course I. The faculty-student interaction is good and the opportunities for a strong background and doing research are many.

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# "Technology gives great power;"

(Continued from page 5)  
tive act is considered to be vital to the institution.

It is becoming increasingly recognized that you cannot separate, for example, occupational health from stress on the job, and routinized activity: It is in the best interest of a firm to try to arrange conditions under which the most creative work takes place.

*What is the relationship of R&D and industry?*

The original growth of US productive capability (we became wealthier than the Europeans per capita) came before the turn of the century. We continued to grow wealthy and

become more affluent. Beginning about 1900 we began to apply new techniques that were primarily being developed in Europe, and led to the establishment of industrial laboratories and industrial science and technology in the US.

The two major thrusts around the turn of the century were in organic chemistry, leading to the synthetic chemistry industry. The other thrust was in electrical engineering, which led to the development of the electrical industry in the US, then subsequently to the electronics industry. About the same time the airplane was invented: that developed into an indigenous

aeronautic technology, which was largely spawned in this country, and for which we have maintained traditionally a somewhat superior technology, especially in the last two or three decades.

all, of the productivity increases (increases in output per unit labor) come from relatively small technological developments that do not require direct research and development in the conventional large

which advances in scientific understanding are necessary to push back the forefront of knowledge; only here does research and development play a direct and significant role. That does not mean that research

## The question is: What do each of us live for?

We became wealthier than Europe prior to the time we had any significant amount of industrial research and development or any basic research underway.

This is not to imply that it is not absolutely essential to us today. Most, but nowhere near

laboratory sense. They take place by learning on the job, by improvements in technique from day to day, industrial engineering, and other things which make for ingenious new product design that takes place in engineering organizations.

It is only in those fields in

done a hundred years ago or even fifty isn't crucial to design problems today. But it isn't particularly research that is taking place at the forefront of science today.

The sophisticated technical industries that use the most advanced kinds of technology that are derivative from R&D are a relatively small part of the American economy, like 10 or 20%.

*If small improvements in technique are the best way to improve productivity, how do you encourage them?*

There are lots of methods. It depends on the industry, and it depends on what you are trying to do. It is very clear that the improvement in agricultural productivity in this country came from just the diffusion of some large, but in many cases small, changes in pesticides, small changes in contour farming, in land reclamation, in tool improvement.

*How was it diffused?*

By agricultural extension agents, and the land grant colleges, plus the fact that the government subsidized prices, so that great improvements in productivity would not result in enormous loss in prices. There was fundamental subsidy to the farmer on the downside.

(Please turn to page 7)

## UAP: candidates state platforms

By Howard D. Sitzer  
Janbergs

Roland Janbergs '75, a computer sciences major, has been an enthusiastic participant in the Undergraduate Association. He is presently running the Non-Resident Student Association, serving on the Grievance Committee, and is a member of the UA Secretariat.

Janbergs feels that the conditions at the Institute can be improved if student government functioned effectively. He contends that biweekly General Assembly meetings are a must in order to "at the very least" communicate information between student groups.

Janbergs prefers to focus on student input on academic policy, the establishment of an efficient Student Grievance Committee, and the sponsorship of a greater variety of diversions such as social events and concerts to remedy "the lot of J.Q. Student." Hillary Morgenstern ('74 biology) will be running for UAVP with Janbergs.

Russell

Larry Russell '74 is a political science major and a member of the "Phi Cancer Semgma" living group of Northgate apartments. He is quick to point out that he has no qualifications for the position of UAP because he doesn't believe they are necessary. According to Russell, "nobody ever does anything anyway."

Russell fervently believes that student government at MIT is "utter bullshit" because of student apathy and students' interests in the governance of their individual living groups. Russell favors the present Committee System of the Institute because he feels that MIT is too immense and diverse for students to govern themselves.

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Liv Ullmann, Max von Sydow,  
9:15 Wknd Mat 5:05; & Bo Wider-  
berg's ELVIRA MADIGAN, 7:40.  
Wknd Mat 3:30.

Russell and his running mate Mark Neuhausen ('75 physics) are promoting a platform calling for the removal of all Springfield Ovals at the Institute and the production of one free concert. Beyond that, they've asserted that they will do nothing. They've emphasized their intentions to destroy the Undergraduate Association if elected and are campaigning on the slogan, "A vote for us is a vote for no UAP-UAVP."

Tufts

Linda Tufts '74 has been active in Institute affairs over the past three years. A double major in humanities and electrical engineering, she has served on the Student Center Committee, Discipline Committee, and the Committee on Admissions and Financial Aid as well as being an associate advisor, and McCormick's Athletic and Judicom Chairman.

Tufts would like to restructure the Undergraduate Association into an organization functioning in a similar manner to the Institute Committee System. An Advisory Board to the UA would be created consisting of the principals from the IFC, Dormcom, the Athletic Council, CSC, BSU, and other organizations which serve large MIT constituencies.

In order to combat student apathy, Tufts and her running mate Dave Bok ('74, urban studies and economics) intend to search for people to attend meetings and participate, by visiting the various living groups.

Vlad

Derek Vlad '74 has served in the General Assembly on the Executive Committee and various working committees. A member of the LCA Fraternity and mechanical engineering major, Vlad believes that if it is well-directed the GA can serve as

a useful medium for students to relate to each other and the Administration.

Vlad views the entire structure of the GA as in the formative stages with the resumption of meetings by Curtis Reeves. By operating through working committees and accomplishing things that the students can actually feel and see, Vlad contends that the GA will function properly. He also sees the UA as a promoter of social events, and cites the co-sponsorship of spring weekend with the Student Center Committee as an achievement in that direction.

Lee Allen '76 of Burton House will be running for UAVP on Derek's ticket.

Wilkins

Jerry Wilkins '74 is a member of the SAE Fraternity and an economics major. Having served

as President of his student body in high school, Wilkins believes that the Undergraduate Association can be rejuvenated if one approaches it with a social platform. He envisions the UA making a major contribution to the school by "making weekends more pleasant, improving student morale, and promoting various student interests."

Wilkins feels that the Institute Committee System is a good idea but disapproves of consolidating power in the hands of a few. He would like the UA to have a greater role in influencing academic policy. Since MIT has a major effect on the Cambridge community, Wilkins would be inclined to articulate student opposition to MIT local policies through the GA.

Wilkins will be running with UAVP candidate Steve Jordan '74 (economics) of the Phi Gamma Delta Fraternity.

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# it requires great restraint"

(Continued from page 6)

Furthermore, we did something else, inadvertently; we didn't do much to cause the farmer, or anyone else, to take care of the displaced worker. He

## In Japan, you can't be fired.

was just sent to the city. That social cost was borne by somebody else, it wasn't borne by the farmer. It was borne by the individual worker and the rest of the society.

I don't mean to imply that exactly the same techniques work in some other area. One of the important aspects of introduction of change, either of new products which displace other products, or new techniques that displace other techniques, is that people are displaced. That is, you lose your

## Holloman says our wealth came before our R&D.

job, because the plant becomes more productive and it isn't growing very fast. Secondly, you have to undertake a new job.

In this country, there is very little support for the displaced worker, either to help re-train him (there's some, but not a hell of a lot) or to help him move to a place where there is a new job, or to take care of the inadvertent costs.

*Do other countries give more support to the displaced worker than we do?*

Yes. Both Sweden and Germany, for example, have national programs to aid the re-training and movement of displaced workers. The programs are substantially greater, but of course they are smaller countries.

Germany though, imports workers so the situation is even better where you have a growing economy, and a demand for more and more workers. Their rate of growth has been much higher than ours for several decades.

In Japan, you can't be fired. It's a social value in their society. You go to work in a large company in Japan, and you have a job for life. Here's a highly competitive society, and if you took that kind of stand in the US, people would think you were some kind of kook. The essential value structure there is that the company is paternalistic and you work for them for life.

Furthermore, your advancement in Japanese industry is largely, although not exclusively, based on seniority, not performance.

As long as their industry grows, it doesn't matter. Look at the dynamism of such a system. If you know, when you're running a firm that a) you have to be increasingly competitive, and b) you've got to keep all your workers working, you've got to grow, and everybody knows it.

Their growth rate is 10%, ours is 2%.

Sure, we have pressure to grow [in this country]. It's clear that getting a larger share of the market, or increasing volume increases profitability. But the

because they clearly, as you and I would, want to protect their jobs against yearly economic or industrial fluctuations.

Thirdly, there are a wide variety of housing and building codes to protect local interests; sometimes to protect the pro-

## To talk of technology as demonic is just nonsensical.

pressure to keep those workers working is nowhere near as great as in Japan.

*What is big industry in the US?*

The biggest single factor in the American economy, I think, is the construction industry. Something a little less than 20% of the industrial output of the US... I don't think anybody would claim that advances in construction technique depend very markedly on advanced research and development carried on today.

*Is the construction industry hard to do R&D for?*

[The nature of the industry is such that] it is difficult to both support the R&D and it is difficult to use the results of new technology.

First, it is a local industry. In house building, for example, there are very few firms, like three or four, that build more than five of 10,000 units. So, they can't get economies of scale.

Secondly, it is an industry that has great fluctuations, from year to year, and season to season. There is great resistance to change on the part of the labor element in the industry,

producer, sometimes to protect the indigenous labor, and sometimes because we haven't learned better.

Furthermore, there is very little external competition. All of these tend to make the construction industry somewhat more resistant to change and somewhat more resistant to the application of technology, and somewhat less capable of supporting what you and I would call sophisticated R&D.

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